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Cannabis Environmental Best Practices Task Force

The Task Force on Cannabis Environmental Best Practices is convened pursuant to HB 3400 Section 132 (1) to study and make suggestions to support the use of environmental best practices with respect to electricity and water use in the production of cannabis. The Task Force is directed to prepare a report of its suggestions for use by the Legislature. The following report fulfills that directive.

DRAFT

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Senate Appointed:

Senator Lee Beyer – Oregon Senate

Senator Jeff Kruse – Oregon Senate

House Appointed:

Representative Ann Lininger – Oregon House of Representatives

Representative Carl Wilson – Oregon House of Representatives

Governor Appointed:

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Racquel Rancier – Oregon Water Resources Department

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Executive Summary

Oregon has been a center of cannabis cultivation for decades. Until 1998, when the state legalized medical marijuana, production was limited to the illegal market, and was associated with heavy consumption of energy. As state laws have evolved—most significantly with the passage of Measure 91 in 2014, legalizing adult-use recreational cannabis—a legal cannabis market has emerged and brought with it industry interest in water and energy efficiency. Producers may now openly engage in discussions about water and energy use, and share ideas with their peers across the agricultural and business sectors to gather and disperse information about energy and water efficiency.

In this context, the Task Force on Environmental Best Practices was created by Oregon House Bill 3400 in 2015, and met five times from April through August of 2016. The Task Force heard testimony from cannabis producers, utilities, and private sector service providers, leading to discussions about how best to ensure that producers have access to information on environmental best practices, and on how to encourage the adoption of best practices throughout the sector. The Task Force also considered ways to address the need for deeper research into cannabis production techniques, and into other aspects of the cannabis sector (including health and safety). Representatives from state agencies including the Oregon Liquor Control Commission, Oregon Department of Agriculture, Oregon Department of Energy, and Oregon Water Resources Department were included in the conversation both as Task Force members and as panelists.

Based on the information gathered, the Task Force is recommending that the Oregon Legislature consider these steps to encourage use of environmental best practices in cannabis production:

- (1) Support access to education and technical assistance related to best cultivation practices;
- (2) Support the creation of voluntary third party certification programs;
- (3) Encourage research into cannabis issues, including environmental best practices, health, and other aspects of the cannabis sector;
- (4) Investigate water regulations for small-scale producers.

By examining these issues further, Task Force members believe Oregon can be a national model for environmentally sound cannabis production.

Introduction and Background

In November of 2014, Oregon voters passed Measure 91, legalizing recreational marijuana. House Bill (HB) 3400, passed in 2015, was comprehensive legislation that clarified state agency responsibilities and state law in relation to marijuana in Oregon. Both laws have been combined into Oregon Revised Statute (ORS) 475B.

HB 3400 called for creation of a Task Force on Cannabis Environmental Best Practices to “study the use of electricity and water by, and the agricultural practices associated with, the growing of cannabis.”¹ The Task Force was directed to submit a report to the Oregon Legislature with “suggestions related to environmental best practices for the propagating, producing, and harvesting of cannabis.”²

During the period from April 2016-August 2016, the Task Force met five times to fulfill the mandate of HB 3400. This group developed a set of recommendations to the Oregon Legislature. This report outlines the work of the Task Force, which includes exploration of: (I) why use of environmental best practices matters in the arena of cannabis production; (II) steps other jurisdictions are taking related to this issue; (III) information the Task Force gathered and key themes heard from relevant experts; (IV), and suggestions to the Oregon Legislature for next steps.

¹ See HB 3400 at Sec. 132 (2).

² Id.

I. Environmental Issues in the Cannabis Sector

Over the last several years, news reports and articles have appeared claiming that cannabis production can have a significant impact in terms of energy and water use.

Energy consumption of cannabis production can be significant and vary widely between different methods of growing operations. Electricity consumption can vary from below 1 kWh/ft² of canopy for outdoor solar-powered facilities, to more than 140 kWh/square ft² for completely indoor grows.³ Anecdotal information on growing operations has included reports of high electricity usage in areas that local utilities had not anticipated, resulting in local distribution challenges. Due to the formerly illegal nature of parts of the cannabis growing business, good communication between the sector and utilities could not occur. Utilities can now communicate with cannabis businesses like any commercial customer.

Water use can be significant for cannabis production, as it can with other agricultural crops. Water consumption data for cannabis are scarce, but at least one scientific review determined that a mature cannabis plant can consume up to 22.7 liters of water per day in the 150-day growing season.⁴ By comparison, a wine grape plant uses approximately 12.64 liters of water per day.⁵ It is important to note that cannabis grows tend to be much smaller than farms of other agricultural crops, and that while individual cannabis plants may consume more water than some individual plants of other types, cannabis grows do not necessarily consume more water than other farms.

Members of the Task Force recognize that it is legitimate for farmers to use both water and electricity to produce this crop. At the same time, there are ways to encourage efficient energy and water usage in this and all agricultural sectors. Task Force members suggest that the Legislature encourage efficient use of these resources in the cannabis production sector by supporting these steps:

- Education and technical assistance to help producers utilize best practices and access existing incentive programs;
- Development of a voluntary certification; and
- Research concerning environmental best practices and other issues related to cannabis including health effects, safety issues, and the properties of specific varieties to help the industry move forward in a safe and productive manner.

³ Northwest Power & Conservation Council, 2015, Survey of Cannabis Growers. (need link)

⁴ Scott Bauer, 2015, "Impacts of Surface Water Diversions for Marijuana Cultivation on Aquatic Habitat in Four Northwestern California Watersheds," *PLOS ONE*.
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0120016>.

⁵ Id.

II. Steps Other Jurisdictions are Taking to Support Environmental Best Practices for Cannabis Production.

The Task Force sought information regarding steps that other jurisdictions are taking to support environmentally sound cannabis production.

Boulder County, Colorado, in an effort to combat an increase in carbon pollution from indoor cannabis production, created a requirement for renewable energy and an Energy Impact Offset Fund. Cannabis cultivation operations must either directly offset 100% of electricity and any natural gas, liquid fuel, bio-fuel or propane consumption through a verified subscription in a Community Solar Garden, renewable energy generated on site, or equivalent approved by the Building Official or pay a monthly fee of 2.16 cents per kWh into the Energy Impact Offset Fund.⁶ The Boulder County website notes that “the fund is being used to educate and encourage best marijuana cultivation practices with regards to energy usage as well as to fund other carbon offset projects such as the development of more renewable energy.”⁷ Growers also receive data from monitoring systems they are required to install, which helps them make informed decisions about how to reduce their energy usage. Boulder County hopes that this data, combined with data on other growing practices and crop yields, can be further analyzed to recommend future growing best practices.

In Washington State, Mason County Public Utility District made the decision to have an electricity rate classification specifically for legal cannabis producers and processors. The rate producers and processors pay falls between the small commercial and large commercial energy rates.⁸ The utility district decided to do this because of the amount of energy used in indoor grows and the possibility of the growing operations scaling up production in the future. Customers in this new rate class are not eligible for federally funded conservation provided through the utility from Bonneville Power Administration.

Additionally, states have recognized the need for action to support research into cannabis production. A memo to the Washington Liquor Control Board noted that as the cannabis industry matures, academic and industry agricultural researchers should continue to measure the environmental impact of cannabis production methods.⁹

⁶ Boulder County Commission Resolution 2014-41, 2014.
<http://www.bouldercounty.org/doc/landuse/res201441.pdf>

⁷ Boulder County website, “Boulder County Energy Impact Offset Fund.”
<http://www.bouldercounty.org/env/sustainability/pages/mjimpactoffset.aspx>

⁸ Mason County Public Utility District website, “Rates.” <http://www.pud3.org/service/billing-options/rates>

⁹ Michael O’Hare, et al, 2013, “Environmental Risks and Opportunities in Cannabis Cultivation,” *BOTEC Analysis Corp.* http://lcb.wa.gov/publications/Marijuana/SEPA/BOTEC_Whitepaper_Final.pdf

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The examples above reflect choices local jurisdictions are making to better serve their local needs. Like Oregon, Colorado and Washington have left much of the law open to local control. Energy needs vary throughout states and rather than imposing regulations that won't fit all communities, legislators have left some of the decision making up to local governments.

III. Summary of Outreach

A. Information Gathered

The Task Force conducted five meetings between April and August of 2016 to gather information regarding the status of the industry, best practices, and potential next steps to support efficient use of energy and water in cannabis production. Below is a summary of the content of each meeting, including the individuals from whom we gathered information through testimony and submission of written materials.

April 12, 2016

Initial organizational meeting.

May 19, 2016

Adam Crawford, Committee Administrator, Oregon General Assembly
Federal and State legislative history and actions as they relate to marijuana legalization in Oregon

Lauren Henderson, Assistant Director, Oregon Department of Agriculture
ODA Certification Program, Commodity Commission process and Hemp legislation

Racquel Rancier, Senior Policy Coordinator, Oregon Water Resources Department
Water use in relation to cannabis cultivation

Jesse Sweet, Senior Policy Advisor, Oregon Liquor Control Commission
Canopy designations and related OLCC administrative rules

Chris Van Hook, Clean Green
Andrew Black, Certified Kind
Third party cannabis certification program overview

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June 8, 2016

John Morris, Founder and Board Secretary, Resource Innovation Institute (RII)
Importance of water and energy conservation, examples of how other jurisdictions are addressing consumption issues.

Jeremy Klettke, Jesce Horton, Jared Watters and Rosa Cazares
Energy and Water consumption in Cannabis production: Best practices, barriers, and areas the state could provide assistance.

Jenny Dressler, Oregon Farm Bureau
Elizabeth Remley, Representing Oregon Nursery Association
Available resources to educate growers about environmental best practices

Dr. Mowgli Holmes, Chief Scientific Officer, Phyllos Bioscience
Kathy Lombardi, Maul, Foster, Alonghi (MFA)
Benefits of cannabis research in relation to environmental best practices

John Morris, Founder and Board Secretary, Resource Innovation Institute (RII)
Process, planning and timeline for a third party cannabis certification program

July 11, 2016

Adam Bartini, Energy Trust of Oregon
Brendan McCarthy, Portland General Electric
Current energy incentive programs, barriers, best practices and concerns

Marty Stipe, Facilities Engineer, Oregon Department of Energy
Blake Shelide, Facilities Engineer, Oregon Department of Energy
Energy estimates of recreational applicants

Nathan Rix, Marijuana Portfolio Project Director, Oregon Liquor Control Commission
Overview of OLCC educational outreach

Doug Woodcock, Deputy Director, Oregon Water Resources Department
Domestic well information and history related to medical and recreational marijuana

B. Key Themes We Heard

Across the Task Force meetings, the suggestions and concerns heard fell under a few key themes:

1. There is a need for education and technical assistance to help producers learn and implement existing best practices related to energy and water use and utilize available incentive programs.

Cannabis production was illegal for decades, and many of the producers operating today started their businesses in the illicit market, where information on environmental best practices for cannabis cultivation was unavailable. Even producers who founded their businesses after legalization have lacked comprehensive guidance from within or outside the industry on how to maximize water and energy efficiency, especially the relationship between energy efficiency and increased or decreased production. Accordingly, we heard a strong call for education and outreach to producers regarding methods for using electricity and water efficiently in this sector. We also heard that many producers may be unaware that existing energy efficiency incentive programs, such as the program run by Energy Trust of Oregon, can provide help to producers who seek to improve the energy efficiency of their operations.

At least one presenter cited the effective statewide outreach that the Oregon Liquor Control Commission (OLCC) conducted immediately following passage of Measure 91 as a good model for outreach. During that process, OLCC hosted community meetings around the state to share information with people seeking to enter the cannabis sector on what was and was not legal, and how to engage with the agency in a fruitful manner.

Other presenters suggested that Energy Trust or another third-party entity could provide that kind of outreach and technical assistance on best practices and available incentives. We heard concern that because utilities receive power through the Bonneville Power Administration face limits on what kinds of outreach and assistance they can provide, producers in areas of the state not served by Energy Trust may lack access to information and incentives that would be helpful. Energy Trust only works within the PacifiCorp and PGE service area, potentially leaving a gap in access to information for some producers who can legally produce, but may not be able to receive information or incentives from Energy Trust or a similar program.

The Task Force learned that Oregon's state agencies including Oregon Department of Agriculture, OLCC, and Oregon Department of Energy are providing helpful guidance to producers in the legal cannabis sector, and that they could play a key role in disseminating information about best practices and existing incentive programs. By providing more computer

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links to information sources on public websites and potentially conducting targeted outreach, state agencies could disseminate information.

In addition, the Oregon State University Extension Service, public universities, and some other entities that receive federal funds, as well as utilities receiving power from the Bonneville Power Administration, face limits in their ability to provide information and technical assistance because cannabis is a Schedule I controlled substance under the federal Controlled Substances Act. Consequently, we heard that there is a need for funding for technical assistance that might otherwise be available through those entities.

2. The cannabis sector could benefit from a voluntary certification system that producers could participate in to show consumers that they employ environmental best practices.

Speakers expressed that it would be useful for producers to have the choice to seek a third-party certification showing they adhere to environmental best practices in their cannabis production. These included representatives of groups that have developed or plan to develop certification systems related to environmentally sustainable production, including Oregon Kind, Clean Green, and the Resource Innovation Institute.

Producers testified that this approach would simultaneously encourage energy and water conservation and would provide a marketing boost to producers that have earned the certification. Many cannabis consumers might prefer to purchase a sustainably produced product, and a label of certification would provide these producers a means by which to differentiate their products from others in the market. The United States Department of Agriculture (USDA) reported that consumer demand for organically produced goods continues to show double-digit growth, providing market incentives for U.S. farmers across a broad range of products.¹⁰ Since cannabis is federally illegal it cannot be certified “organic,” but other certification programs can signify production using environmentally protective strategies.

The Oregon Department of Agriculture presented information about a certification program in the wine sector that provides one possible model for a cannabis certification. In 1995, winegrowers in the Willamette Valley created the Low Input Viticulture and Enology (LIVE) wine certification program, which uses scientifically established standards and procedures to ensure wine grape farming and wine making production are sustainable and have a minimal environmental impact.¹¹ Winegrowers and vintners in the certification program display the LIVE logo on their products, which informs consumers that the product has been grown and manufactured according to a set of sustainability standards.

¹⁰ USDA, 2016, “Organic Market Overview.” <http://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview.aspx>

¹¹ LIVE, 2016, “LIVE Wines Backgrounder.” https://livecertified.org/sites/default/files/LIVE_Media_Primer.pdf

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The LIVE standards were developed (and continue to be refined) by a third party nonprofit (LIVE, Inc.). LIVE contracts with other entities, like the Oregon Department of Agriculture, to provide third party audit services for Oregon wine producers under a fee-for-service model (thereby recovering all costs of performing audits). Following the audit, the Oregon Department of Agriculture reports to LIVE. As the certifying body, LIVE determines if the audit meets the established criteria to receive the certification. The Task Force received some indication that the cost for the states role in implementing the LIVE certification program was around \$100,000.

Representatives from the Oregon Department of Agriculture noted that a certification program for any agricultural sector, including cannabis, can be developed. In general, the Oregon Department of Agriculture can provide assistance to an agricultural sector developing a certification program by helping the sector determine if selected standards are auditable or offer ideas of standards used by other certification programs.

With voluntary certification programs, producers can choose to participate or not, depending on whether it makes business sense to pursue the certification. The testimony we heard suggested that it could be useful to appropriate funds to Oregon Department of Agriculture to support creation of a certification system. The agency could issue a competitive request for proposals (RFP) and dispense the funds to a third party that would create a set of certification protocols for cannabis production.

3. There is a need for research into environmental best practices and other issues to support responsible operation of the sector.

Funds for cannabis research are far scarcer than other research dollars. This leaves key questions about cannabis unanswered. Specifically, we heard testimony that there is inadequate data regarding best practices for cannabis production, the impacts of various kinds of lighting and heating, methods of production, health effects, properties of different strains, intoxication issues, and other key issues. There is also a lack of data on how much water cannabis production requires and what practices can reduce water use. The testimony we heard regarding the need for additional research aligns with recommendations produced by the SB 844 task force on medical cannabis research, which also concluded that research is needed to learn more about health impacts, key properties, and potential beneficial uses of the plant.¹² The cannabis industry and the general public both would benefit from wider availability of such information.

¹² Candice Beathard, Karen Volmar, 2016, "SB 844 Task Force Report: Researching the medical and public health properties of cannabis."
<https://public.health.oregon.gov/diseasesconditions/chronicdisease/medicalmarijuanaprogram/documents/sb844taskforce/sb844report.pdf>

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The Legislature has taken some steps to support needed research, but more is needed. House Bill 3400 calls for collection of information regarding intended and actual use of energy and water in production of recreational marijuana.¹³ Other legislation empowers OLCC to issue a research certification to allow completion of research.¹⁴ The missing element is funding to support completion of key research into subjects like best practices, health effects, safety, and the properties of various plant strains.

The task Force heard two principal suggestions for how further research might be funded in the future: the first was to reallocate some cannabis tax revenue to research, and the second was to form a commodity commission for cannabis (including hemp). Commodity commissions, of which there are 23 in the state today, have a wide range of authorities, specifically defined in statute, including the ability to fund research needed for the sector. A commodity commission has the authority to impose an assessment on the sector to generate operating revenue.

Task Force members believe that it would be appropriate for the Legislature to support additional research regarding environmental best practices, as well as research into health, safety, and other issues. To that end, the members of the Task Force suggest that the Legislature evaluate the possibility of using marijuana tax revenue or a fee levied through a commodity commission to support cannabis research in Oregon.

4. Current requirements for commercial water rights hamper the ability of “micro farms” to grow and sell crops.

The task Force heard testimony from the Oregon Water Resources Department that as medical marijuana has become more commercialized over the years, many growers may find themselves out of compliance with Oregon water laws and need to obtain a water right. Existing exemptions from the need to obtain a water right to use water from a well (groundwater exemptions) do not apply to the irrigation of a commercial crop. Therefore, commercial medical growers and growers seeking to transition to the commercial recreational sector may face challenges moving from the non-commercial medical sector to the commercial sector. While they do not need a water right to support up to a half-acre grow for the non-profit medical sector, they do need a water right (or verification that water is received from a legal source), to support the same half-acre grow of cannabis if they are growing medical marijuana for profit or engaging in the OLCC commercial system.¹⁵ (A groundwater right is also currently required for any commercial crops grown on a half-acre or less – such as those that may be sold on a small-scale at local farmers markets, small nurseries, or small roadside farmstands.¹⁶)

¹³ Oregon HB 3400, 2015, Section 12 (3) (d).

¹⁴ Oregon HB 3400, 2015, Section 113 (4) (b).

¹⁵ Oregon Administrative Rules [hereafter OAR] 845-025-1030 (5) (f) (D).

¹⁶ ORS 537.545 (1) (b); OAR 690-340-0010.

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Given the strong interest the state has in encouraging small rural farms and sustainable economic activity around our state, it could be useful for the Legislature to consider whether rules that allow use of groundwater without a water right for the irrigation of up to a half-acre of lawn and non-commercial garden should also be construed to allow irrigation of a half-acre of OHA or OLCC-regulated cannabis or other commercial crops. Task Force members recognize that water law and issues of water scarcity are complex and significant, so we do not make a recommendation as to outcome on this issue, but it appears to be an issue that could merit further study in the appropriate legislative policy committee.

IV. Recommendations

Based on the information Task Force members gathered, we suggest the Oregon Legislature consider these steps to encourage efficient use of energy and water in Oregon's legal cannabis sector.

1. Help producers access information regarding best practices for use of electricity and water in cannabis production.

It would be useful to provide education and technical assistance to producers so they can use existing best practices for water and energy efficiency in crop production. Educators could also provide information about existing incentive programs that are available through entities such as Energy Trust of Oregon. Information and technical assistance could be delivered through a combination of state agencies, Energy Trust of Oregon, and additional entities with expertise in the issue.

2. Encourage creation of third party certification systems.

Based on the example of the LIVE certification program, there is evidence that a voluntary certification program could be beneficial to the emerging cannabis industry. The Task Force members suggest that the Legislature consider what role, if any, the state should play in creation of such a program, so that producers can demonstrate to consumers that they use environmentally strong practices in their water and energy use. A small amount of resources could be allocated, through a competitive RFP process, to support development of a certification system. Oregon Department of Agriculture could issue the RFP. After the certification standards are developed, ongoing costs of administering the certification program would be covered through certification fees.

3. Support completion of research into environmental best practices, as well as other needed research.

The Task Force members suggest that the Legislature support research into environmental best practices with cannabis, as well as health impacts, safety, and other issues. This aligns with the

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2016 recommendations produced by the SB 844 task force on medical cannabis research. Such research could be funded either using cannabis tax revenues or through fees created through the formation of a commodity commission.

4. Explore the issue of water regulations for small farms.

The Task Force members suggest that a standing Legislative committee with appropriate policy expertise consider whether it would be helpful to allow small-scale producers of cannabis and other crops—those producing on one half acre or less—to have legal access to water under the same law that allows individuals to produce one half acre of non-commercial garden or to irrigate a lawn. Recognizing that water law is complex and water scarcity issues are important, it may not make sense to allow such water use, but the Task Force members suggest it for consideration consistent with our state’s interest in supporting small business development, creating parity among producers, eliminating the illicit cannabis market, reducing the challenges and complexities in enforcing the law, and promoting economic self-sufficiency.